The invention described herein may be manufactured and used by or for the Government for governmental purposes without the payment of any royalty thereon.

This invention relates to improvements in firearm magazines and is directed more particularly to the type commonly known as "box magazines." Military tactics frequently require the use of a shoulder-operated firearm to change from an upright to a prone position without relinquishing his hold on the firearm. In so doing, it has been found expedient to employ the firearm to break the fall of the operator. Since a magazine of the type herewith concerned is customarily mounted so as to extend downwardly out of a firearm, the consequent battering on the bottom of the magazine may result in bending of the floor plate and distortion of the walls. It is therefore an object of this invention to provide a floor plate construction for a box-type magazine which can adequately withstand repeated and heavy impacts without malfunction and yet permit rapid assembly or disassembly from the body of the magazine when so required.

In prior art types of firearm magazines, the follower spring is usually secured to the underside of a follower in more or less of a permanent manner. Consequently, if either the follower or spring should require repairs or replacement, both components must necessarily be removed from the magazine. Such procedure, of course, increases the number of replacement parts required and invariably results in increased maintenance costs. Furthermore, prior art methods of securing a follower spring to a follower utilize only the free end of the uppermost coil to provide support for the follower in. In such cases, the follower is prone to tilt laterally in the magazine to the extent of seriously jamming therein.

Accordingly, it is a further object of this invention to provide means for securing a follower spring to a follower in such manner that lateral tilting of the follower is obviated and at the same time assembly or disassembly of the two components is readily permitted.

It is a particular object of this invention to provide an improved box-type magazine characterized by simplicity of construction, positiveness of action, ease of manufacture, and lightness of weight.

The specific nature of the invention as well as other objects and advantages thereof will clearly appear from a description of a preferred embodiment as shown in the accompanying drawings in which:

Fig. 1 is a right side elevational view showing the magazine of this invention hatched to a firearm.

Fig. 2 is a fragmentary rear view of the magazine showing the floor plate assembled to the magazine casing.

Fig. 3 is a bottom view of the magazine casing.

Fig. 4 is a fragmentary front view showing the structure of the front end wall and the relationship to the firearm receiver of the stops on the side walls of the magazine casing.

Fig. 5 is a perspective view looking at the top of the floor plate.

Fig. 6 is a perspective view showing the follower spring secured to the underside of the follower.

Fig. 7 is a top view of the magazine casing.

Fig. 8 is a fragmentary cross-sectional view taken along the line 8—8 of Fig. 4.

Fig. 9 is a fragmentary cross-sectional view taken along the line 9—9 of Fig. 7.

The magazine of this invention essentially comprises a substantially rectangular box-type casing 5 having side walls 28 and a front and rear end wall 29 and 30, respectively, a floor plate 6, a follower 7 designed to carry a double column stack of cartridges 9 into position for chambering by a forwardly moving bolt (not shown), and a follower spring 8 for providing movement to follower 7.

As illustrated in Fig. 1, the magazine is latched to a firearm receiver 10 by means of a spring-biased pivot latch 11 and an oppositely disposed spring-biased detent 12. The nose of the latch 11 engages in an opening 13 preferably formed in front end wall 29 of casing 5 by piercing the metal thereof, as shown in Fig. 8. Detent 12 is arranged to engage beneath a rearwardly projecting, horizontally disposed rib 14 formed on rear wall 30 of casing 5. Located on each side wall 28 of casing 5 is an outwardly projecting integral lug 15 having a flat top surface 16 arranged to contact the walls of receiver 10 so as to correctly position the magazine therein and also prevent any upward movement of the magazine in the event of a heavy blow on the bottom.

It should also be noted that the top of casing 5 slants downwardly and forwardly from rear to front thereby permitting the bullet ends of cartridge 9 therein to slant upwardly when the magazine is properly latched to receive 10. As a result, the front or bolt end of cartridges 9 are more rapidly aligned for chambering without the necessity for increasing the bias of follower spring 8. Such a feature is particularly important insasmuch as the weaker the upward thrust of spring 8, the less friction is encountered in the chambering of cartridges 9, a factor which greatly facilitates ease and speed of cartridge feeding. In addition, the aforementioned upward slant of the bullet ends of cartridges 9 assures more positive chambering by minimizing the possibility of "stubs," or in other words, contact of the tip of the bullet against the breech end of the barrel during the act of being chambered.

Another feature of construction in the magazine of this invention resides in the provision of an inclined shelf 35 arranged to support the front end of follower 7 when the firearm bolt (not shown) is being held in the open or recoiled position by the rear end of follower 7. As shown in Figs. 4 and 7, the front end wall 29 of casing 5 is formed with a lapped joint 27. The top portion of end wall 29 terminates in a pair of integral jaws 32 which define an opening or mouth 33 through which pass the bullet ends of cartridges 9 during the feeding movement thereof. A pocket 34 is formed into the rear surface of that particular jaw 32 which extends from the underlying portion of lapped joint 27 and this pocket produces the aforementioned inclined shelf 35 thereby forming a raised curved projection on the front face of jaw 32 as best shown at 31 in Figs. 4 and 9. When the last round in the magazine has been fired, follower 7 rises sufficiently to hold the firearm bolt (not shown) in the open or recoiled position. If shelf 35 did not exist, the forward end of follower 7 would tend to overcome the upward thrust of spring 8 and move downwardly into casing 5, since the aforesaid bolt contacts the rear end of follower 7 at a point which lies in a higher vertical plane than the front end contact thereof 7 with end wall 29. It would not be expedient to increase the bias of spring 8 in order to prevent this undesirable movement of the front end of follower 7, since the result-
ing additional friction introduced between each of cartridges 9 as well as between the top surface of follower 7 and the bolt (not shown) would appreciably interfere with the free movement of the bolt. When cartridges 9 are to be inserted into the magazine, the pressure of the firearm bolt on the rear end of follower 7 is necessarily removed. Then when follower 7 is depressed, the front end thereof is cammed past incline shell 35 and is thereby freed for vertical movement within casing 5.

Follower 7 is preferably a unitary member constructed of sheet metal and arranged to be vertically movable within casing 5. Converging holding lips 26 formed at the top of casing 5 engage in order to retain upward movement of follower 7. An inwardly extending protrusion 17 is formed into one side of follower 7 and the other opposite side is provided with an inwardly bent section 18 produced by forming a pair of accurately formed notches 19 and bending the metal therebetween inwardly toward protrusion 17. The free ends exposed by bending section 18 are divergingly curved and extend toward opposite sides of follower 7 thereby forming hook-like projections as best shown at 20 in Fig. 6. Spring 8 is preferably formed into rectangular coils, the uppermost of which is arranged to fit between the opposite sides of follower 7 and be retained by protrusion 17 and projections 20 in a manner to be shown.

Floor plate 6, the exterior outline of which is shaped to conform to the configuration of the bottom of casing 5, is provided about its front end with an upturned edge 21 and with bent over portions 22 extending partially along both sides. The upturned edge portion 21 is arranged to fit snugly about the front wall of casing 5 when floor plate 6 is fully assembled thereto. Bent over portions 22 are adapted to slide over outwardly turned flanges 23 formed at the bottom on both sides of casing 5. The rear end of floor plate 6 is hooked upwardly and inwardly, as shown at 24 in Fig. 5, to resiliently engage behind the rear wall of casing 5 when fully assembled thereto. A pair of raised cam surfaces 25 are formed on floor plate 6 and arranged to straddle hook-like end 24 for a purpose to be shown.

In assembly, the uppermost coil of spring 8 is placed on the underside of follower 7 so that the longer side of the coil engages beneath hook-like projections 20 with such coil seated on bent section 18. The coil is then slightly compressed and the shorter side pushed upwardly beyond protrusion 17 whereupon release of the coil allows it to snap into place behind protrusion 17. To disengage follower 7, it is merely necessary to twist the longer side of the uppermost coil out of engagement with hook-like projections 20 and separate the two components.

Thus there is provided a simple inexpensive means for positively securing a follower spring 8 to a follower 7 whereby rapid assembly or disassembly of both parts may be easily effected. Moreover, the contact of the uppermost coil of spring 8 against the bottom of follower 7 is especially effective in preventing any inadvertent excessive lateral tilting thereof which could result in the jamming of follower 7 in casing 5.

To assemble floor plate 6 to casing 5, the bent-over portions 22 of the former are engaged with flanges 23 on casing 5 and the floor plate is then pushed rearwardly until hook-like end 24 is cammed over and snaps behind the rear end wall 30 of casing 5. At this time, the upturned front edge 21 of floor plate 6 fits snugly about the front wall of casing 5. To disassemble the two parts, the hook-like end 24 of floor plate 6 must first be lifted from the floor plate 6 itself. This can be conveniently accomplished in the absence of any tools with the nose of a bullet. Thereupon, floor plate 6 can be readily slid out of engagement with casing 5. Cam surfaces 25 serve to raise the bottom coil of follower spring 8 sufficiently to prevent engagement thereof with hook-like end 24 as floor plate 6 is being slid forwardly.

The engagement of bent-over portions 22 with flanges 23 described above and illustrated in Fig. 2, provides a sturdy construction which can withstand repeated and heavy blows without bending of floor plate 6 or buckling of the walls of casing 5. In addition, the snug fit with the upturned front edge 21 of floor plate 6 with front end 29 of casing 5, as well as the engagement of hook-like end 24 with rear end wall 30 of casing 5, both serve to distribute the stresses which occur when the bottom of the magazine is subject to heavy blows.

Furthermore, the construction of lapped joint 27 is the use of a single wall thickness for front end wall 29 in that increased resistance is thereby provided against possible distortion thereof due to contact with the bullet tips of cartridges 9 as a result of their relative inertia during the recoil movement of the firearm and consequently of the magazine latched thereto.

Since all the components of the magazine, with the exception of follower spring 8, are stamped from sheet metal, it will be appreciated that the magazine lends itself to ease and economy of manufacture and in addition provides the lightness of weight so necessary in modern shoulder-operated firearms.

The claim:

1. A firearm magazine comprising in combination, a substantially rectangular casing, a floor plate releasably secured to the bottom of said casing, a follower arranged for vertical movement within said casing, said follower having oppositely disposed and downwardly extending first and second sides, said first side having a protrusion on the interior face thereof, said second side having a pair of spaced apart diverging hook-like projections bent inwardly and toward said protrusion on said first side, and a follower spring having a substantially rectangular uppermost coil arranged to lie between said first and second follower sides so as to be releasably retained by said protrusion and by said diverging hook-like portions.

2. In a box-type magazine for firearms, the combination of, a unitary follower arranged for vertical movement within the magazine, and a spring for effecting said vertical movement of said follower, said spring having an uppermost coil arranged to be releasably retained by said follower, said follower comprising a top plate, a first and second side extending downwardly from said top plate, an inwardly extending protrusion in said first side for releasably retaining therebehind the free end of said uppermost coil, a pair of arcuate cuts in said second side, the portion between said cuts being bent over inwardly toward said protrusion formed in said first side, the free ends thereby exposed being curved away from said bent-over portion and towards said first side to form hook-like projections for releasably retaining a segment of said uppermost coil between said projections and said bent-over portion of said second side, all adapted and arranged whereby the initial bias produced in said uppermost coil during the positioning thereof is sufficient to maintain the releasable securing of said follower spring to said follower.

3. In a box-type magazine for firearms, the combination of, a substantially rectangular casing having side walls and a front and rear end wall, each of said side walls having at the bottom edge thereof an outwardly turned flange, a follower arranged for vertical movement within said casing, a spring having an uppermost coil releasably secured to the underside of said follower, and a unitary floor plate comprising a resilient resilient plate member, an upturned edge about the front end of said plate member shaped to conform to the exterior outline produced by said front end wall of said casing and the adjacent portions of said side walls, a bent-over edge portion along at least half of each of said side plate members, said bent-over edge portion being formed with said outwardly turned flanges on said casing, a hook-
like portion at the rear end of said plate member arranged to resiliently engage behind said rear end wall of said casing, and an upwardly extending cam surface formed in said floor plate and disposed on either side of said hook-like portion for camming said hook-like portion out of the way of engagement with said spring as said floor plate is being removed from said casing.

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